

**A NEW SPECIES OF *POLYRHACHIS (HAGIOMYRMA)* WHEELER
FROM THE NORTHERN TERRITORY, AUSTRALIA
(HYMENOPTERA: FORMICIDAE: FORMICINAE)**

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Abstract

Polyrhachis kohouti, a new species of the *penelope* species-group of the subgenus *Hagiomyrma* Wheeler, is described from Arnhem Land in Australia's Northern Territory. The new species is illustrated and characters distinguishing it from other described species of the group are provided.

Introduction

The subgenus *Hagiomyrma* Wheeler of the genus *Polyrhachis* Fr. Smith was recently revised by Kohout (2013). He recognised 48 species as bona fide members of the subgenus and organised them into six species-groups, the *ammon*, *metella*, *penelope*, *schenkii*, *trapezoidea* and *tubifera* groups. One species missed by the recent revision was a *Hagiomyrma* species belonging to the *penelope* species-group that I had collected by hand in Arnhem Land in the Northern Territory. The new species is described and illustrated below and characters separating it from other members of the *penelope*-group are provided.

Methods

Photographs of the holotype were taken by Geoff Thompson (QMBA) on a Visionary Digital BK-plus Lab System using a Canon EOS 5D MkII camera. The source images were adjusted and exported from Adobe Lightroom, focus stacked with Zerene Stacker software and formatted with Adobe Photoshop (Adobe Systems Inc., USA).

Abbreviations for Australian institutions and depositories (with the names of co-operating curators): ANIC – Australian National Insect Collection, CSIRO, Canberra, ACT (Dr Beth Mantle); QMBA – Queensland Museum, Brisbane, QLD; TERC – Tropical Ecosystems Research Centre, CSIRO, Darwin, NT (Prof. A.N. Andersen).

Standard measurements and indices follow those of Kohout (2013): TL – Total length (the necessarily composite measurement of the entire ant measured in profile); HL – Head length (the maximum measurable length of the head in perfect full face view, measured from the anterior-most point of the clypeal border or teeth, to the posterior-most point of the occipital margin); HW – Head width (width of the head in perfect full face view, measured immediately in front of the eyes); CI – Cephalic index (HW x 100/HL); SL – Scape length (length of the antennal scape, excluding the condyle); SI – Scape index (SL x 100/HW); PW – Pronotal width (greatest width of the pronotal dorsum, including the pronotal teeth, or across the

humeri in species without teeth); MW – Mesonotal width (minimum width of the mesonotal dorsum measured along the metanotal groove when viewed from behind); PMI – Promesonotal index ($PW \times 100/MW$); MTL – Metathoracic tibial length (maximum measurable length of the tibia of the hind leg). All measurements were taken using a Zeiss stereomicroscope with an eyepiece calibrated against a stage micrometer. All measurements are expressed in millimetres (mm).

Systematics

Genus *Polyrhachis* Fr. Smith, 1857

Polyrhachis Fr. Smith, 1857: 58. Type species: *Formica bihamata* Drury, 1773: 73, pl. 38, figs 7, 8, worker; by original designation.

Subgenus *Hagiomyrma* Wheeler, 1911

Hagiomyrma Wheeler, 1911: 860 (as subgenus of *Myrma* Billberg, 1820 [*sensu* Wheeler, 1911: 859] = *Polyrhachis* Fr. Smith, 1857). Type species: *Formica ammon* Fabricius, 1775: 394, worker; by original designation.

(For full synonymy citations see Kohout, 2013: 489.)

Polyrhachis kohouti sp. n.

(Figs 1-4)

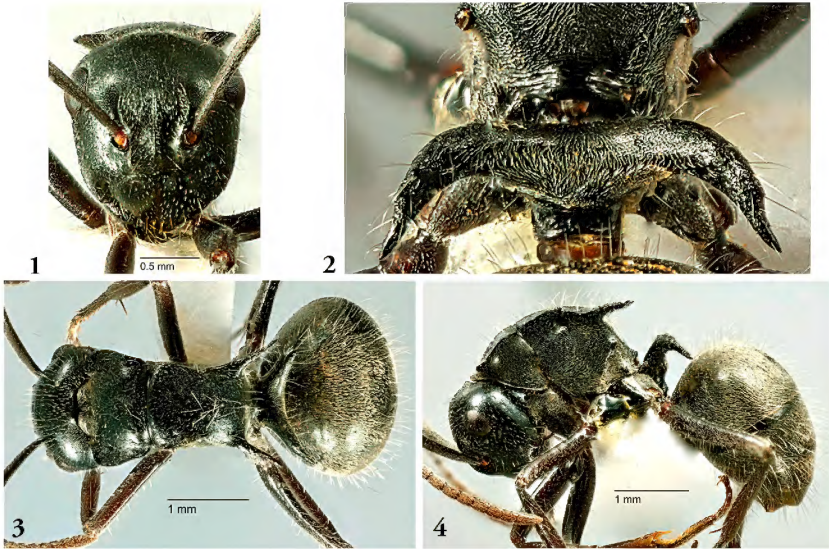
Types. *Holotype* worker: AUSTRALIA (NORTHERN TERRITORY): Arnhem Land, Balkpalkbuy, 60 km SW of Nhulunbuy, 12°35'55"S, 136°31'25"E, elevation 56 m. 22.iii.2006, B.D. Hoffmann. *Paratype*: 1 worker, data as for holotype. Holotype in ANIC; paratype in TERC.

Description. Worker. Dimensions (holotype cited first): TL c. 6.95, 5.80; HL 1.65, 1.50; HW 1.40, 1.25; CI 85, 83; SL 1.75, 1.59; SI 125, 127; PW 1.34, 1.20; MW 0.75, 0.72; PMI 179, 167; MTL 1.93, 1.78 (1+1 measured).

Median flange of anterior clypeal margin with two distinct acute teeth medially, laterally flanked by acute, somewhat laterally directed teeth. Clypeus with median, anteriorly distinct, longitudinal carina; straight in profile, posteriorly rounding into moderately impressed basal margin. Frontal triangle poorly indicated. Frontal carinae weakly raised; central area relatively wide, rather flat, with only anteriorly indicated frontal furrow. Sides of head in front of eyes converging towards mandibular bases in virtually a straight line; behind eyes sides rounding into convex occipital margin. Eyes moderately convex, in full face view marginally exceeding lateral cephalic outline. Ocelli lacking, position of median ocellus indicated by a shallow pit in cephalic structure. Pronotal dorsum distinctly wider than long with humeri widely rounded, dorsally shallowly concave; lateral pronotal margins weakly raised, converging posteriorly towards clearly impressed promesonotal suture. Mesonotal dorsum with margins converging posteriorly towards indistinct metanotal groove. Propodeal dorsum with lateral margins terminating in moderately long, rather strongly divergent

spines with tips weakly turned outwards. Propodeal spiracles situated on moderately projecting tubercles. Petiole with dorsum deeply concave medially, armed with pair of divergent, rather massive, bull horn-shaped spines with tips turned downwards and slightly outwards (fig. 2). Anterior face of first gastral tergite widely rounding onto dorsum.

Mandibles finely, longitudinally striate with numerous piliferous pits. Head, mesosoma and petiole finely reticulate-punctate; somewhat semipolished on vertex of head and dorsum of mesosoma; sides of head and dorsum of spines more coarsely sculptured. Gaster finely shagreened.



Figs 1-4. *Polyrhachis (Hagiomyrma) kohouti* sp. n., holotype worker: (1) head in full face view; (2) petiole in dorsal view (not to scale); (3) dorsal view; (4) lateral view.

Mandibles with numerous golden hairs, longer and curved at masticatory border, shorter and anteriorly inclined towards mandibular bases. Anterior clypeal margin with several anteriorly directed setae medially and a few shorter setae fringing margin laterally. Several, mostly paired, relatively short hairs on clypeus, along frontal carinae and on sides of head, with distinctly longer, anteriorly inclined hairs on vertex and along occipital border. Dorsum of mesosoma and petiole, including spines, with numerous, variously inclined, mostly silvery hairs, longest more than half greatest diameter of eyes. Gaster with abundant, rather long, silvery or pale golden, posteriorly inclined hairs. Closely appressed, silvery pubescence, very sporadic over

dorsal body surfaces; pubescence somewhat denser on sides of mesosoma and posterior face of petiolar dorsum and spines. Dorsum of gaster with somewhat longer and more abundant silvery pubescence, almost hiding underlying sculpturation.

Body black; appendages very dark reddish-brown or black.

Etymology. Named after Rudy Kohout in recognition of his outstanding contribution to *Polyrhachis* taxonomy.

Remarks. *Polyrhachis kohouti* can be easily recognised by the form of its petiole which has a deeply medially concave dorsum and is armed with rather massive, bull horn-shaped spines (Fig. 2). The petiole in lateral view is relatively slender, in contrast to other species of the *penelope*-group where the posterior face of the petiole is usually more-or-less convex or distinctly swollen. Other distinguishing characters of *P. kohouti* include the strongly transverse pronotal dorsum with widely rounded humeri and strongly posteriorly converging lateral margins that are shallowly emarginate before terminating at the distinctly impressed promesonotal suture. The presence of numerous setae on most of the body surfaces also separates *P. kohouti* from other species of the *penelope*-group, which lack hairs, except *P. hoffmanni* which has distinctly longer and sparser hairs on the body. In the key to *Hagiomyrma* species in Kohout (2013), *Polyrhachis kohouti* runs to couplet 26 and can be identified by the following modification and insertion of a couplet. Figure numbers in square brackets refer to illustrations in the original article (Kohout 2013).

- 26 Outline of head in full face view with numerous bristle-like hairs fringing margin between eyes and mandibular bases 27a
- Outline of head in full face view without hairs, or at most with only a few inconspicuous, very short hairs fringing margin between eyes and mandibular bases 27
- 27 Head, mesosoma and petiole very distinctly and evenly, rather coarsely, reticulate-punctate; petiole in profile with posterior face distinctly convex and swollen towards base [Figs 19G-H] (Nth Qld) *P. tenebra* Kohout
- Head, mesosoma and petiole finely reticulate-punctate with sculpture somewhat longitudinally rugulate-striate on vertex of head; petiole in profile with posterior face only weakly convex [Figs 9A-B] (New Ireland, New Guinea, Cape York Peninsula)
..... *P. semiobscura* Donisthorpe
- 27a Petiole armed with rather massive, bull horn-shaped spines (Fig. 2) (NT only) *P. kohouti* **sp. n.**
- Petiole armed with slender, acute spines, mostly curved into shape of first gastral segment or downcurved [*e.g.* Figs 9C, 19A] 28

Polyrhachis kohouti is currently known only from the type locality, with both specimens collected when their nest was disturbed by overturning a log. The species appears to be uncommon because extensive ant collections throughout NE Arnhem Land conducted since 2003, including in the type locality, have failed to find this species again. The vegetation of the type location is open savanna woodland dominated by *Eucalyptus oligantha* with an understorey of dense grasses, on gently sloping, seasonally waterlogged, loamy soil (Fig. 5).



Fig. 5. Seasonally waterlogged savanna woodland in Arnhem Land, the type locality of *P. kohouti* sp. n.

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